



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/817,476 | 04/02/2004 | Lawrence A. Oldroyd | 66638/42649 | 3170 |

21888 7590 01/07/2008
THOMPSON COBURN, LLP
ONE US BANK PLAZA
SUITE 3500
ST LOUIS, MO 63101

| |
|----------|
| EXAMINER |
|----------|

SMITH, JEFFREY S

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2624

| | |
|-------------------|---------------|
| NOTIFICATION DATE | DELIVERY MODE |
|-------------------|---------------|

01/07/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

IPDOCKET@THOMPSONCOBURN.COM

Office Action Summary

Application No.

10/817,476

Applicant(s)

OLDROYD, LAWRENCE A.

Examiner

Jeffrey S. Smith

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/07.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the sensor to generate a sensor image including a geocoded surface model of the first scene, and a geocoded reference image must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The amendment filed November 5 2007 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the sensor to generate a sensor image including a geocoded surface model of the first scene.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

Claims 1, 3-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The sensor to generate a sensor image including a geocoded surface model of the first scene is new matter. The sensor does not geocode the sensor image, nor does the sensor generate a sensor image including a geocoded surface model of the first scene. The sensor image is not geocoded until the last step of conforming. The geocoded surface model of the sensor image is generated after the sensor image is geocoded. For example, claim 9 further defines the conforming step of claim 1 by performing mapping in claim 8 and determining geocoded locations in the sensor image in claim 9. In figure 1, the only image that is geocoded is the reference image in data

Art Unit: 2624

base 28. The entire purpose of this application is use a geocoded reference image to geocode corresponding sensor images as discussed for example in the opening paragraph of the summary. The summary concludes by stating that the reference image provides geocoded or model based coordinates. If the sensor image already includes a geocoded surface model, performing the rest of the steps in claim 1 is superfluous.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-4, 8, 10-11, 13-15, 17-18, 22, and 24-25 are rejected under 35 U.S.C. 103 as being unpatentable over U.S. Patent Number 5,809,171 issued to Neff et al. ("Neff") in view of U.S. Patent Number 6,587,601 issued to Hsu et al. ("Hsu").

Neff discloses claim 1, "generating a sensor image of a first scene with a sensor mounted on a platform" (The test image is captured with synthetic aperture radar. Col. 9 lines 12-14), "accessing a reference image of a second scene, said reference image encompassing said sensor image" (As illustrated in figure 1, the image correlation apparatus includes a template memory means for storing the template), "identifying the portion of the reference image depicted in the sensor image" (As shown in figure 7, the

determining means determines labels in the reference image that are present in the sensor image), "defining an area of the reference image based on said reference image portion" (figure 7 shows an area of the reference image that is defined based on said reference image portion), "conforming said sensor image and said reference image area to a common perspective by transforming the perspective of at least one of said sensed image and said reference image area" (The test image and the reference image from which the template is constructed are oftentimes obtained from different viewpoints, such as from different angles and/or from different directions. In order to at least partially compensate for the differences between the first and second viewpoints, the image processor which forms the template generator means can geometrically warp the template. Col. 16 lines 16-57), and "matching said images of common perspective" (The image processing method and apparatus matches (correlates) the test image with the template. See for example the title and abstract).

Neff is comparing a geographic reference image with a geographic sensed image. But Neff does not explicitly use the phrase "geocoded surface model" and "geocoded reference image."

Hsu discloses a geocoded reference image in reference database module 204. The geocoded surface model of the sensor image is generated by Hsu using gps information provided by the sensor and the surface information from the digital elevation map from the reference database.

It would have been obvious to a person of ordinary skill in the art at the time of invention to match a sensor image with a geocoded reference image for the benefit of

Art Unit: 2624

achieving a high accuracy identification of locations within the sensor image as suggested by Hsu (abstract).

For claim 3, Neff discloses "the sensor image and reference image are of different geometry" (see for example figure 8).

For claim 4, Neff discloses the perspective of the reference image area is transformed to substantially the perspective of the sensor image (Col. 16 lines 16-57).

For claim 8, the matching step comprises determining the translation offset between the images of common perspective, and mapping locations in at least one of said sensor image and reference image by combining geometric transforming functions and functions representing said translation offset (see figure 11 and corresponding discussion in the detailed description).

For claim 10, the transforming step comprises removing perspective distortion from said reference image area to produce a substantially orthographic image of said area (see figure 11 and col. 16).

For claim 11, the removing step comprises performing an inverse perspective transform to remove said perspective distortion (see figure 11 and col. 16).

For claim 13, Neff discloses generating a first image of a first scene; generating a second image of a second scene, said second image encompassing said first image; defining at least a portion of said second image depicting at least a portion of said first image; conforming said first and second image portions to a common perspective; and

Art Unit: 2624

matching said image portions of common perspective (see figure 1). Hsu discloses the first and second images have a coordinate system (Euclidean representation).

For claim 14, Neff discloses at least a portion of said second image defined to depict at least a portion of said first image is less than the entire second image (see figures 7 and 11).

For claim 15, Neff discloses defining at least a portion of said second image that depicts substantially the entirety of said first image (see figures 7 and 11).

For claim 17, the first image portion and second image portion are of different internal geometry (see figure 8).

For claim 18, the perspective of said second image portion is transformed to substantially the perspective of the first image portion (see figure 11 and col. 16).

For claim 22, Neff discloses determining any translation offset between the image portions of common perspective; and mapping locations in at least one of said first image portion and reference image portion by combining geometric transforming functions and functions representing said translation offset (see figure 11).

For claim 24, Neff discloses removing perspective distortion from said second image portion to produce a substantially orthographic image of said second image portion (see figure 11).

For claim 25, Neff discloses performing an inverse perspective transform to remove said perspective distortion (see figure 11).

Art Unit: 2624

Claims 5-7, 9, 16, 19-21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neff in view of Hsu as applied to claims 1 and 13 above and further in view of U.S. Patent Number 5,550,937 issued to Bell et al. ("Bell").

Neff and Hsu disclose the elements of base claim 1.

For claim 5, Bell discloses the perspective of the sensor image is transformed to substantially the perspective of the reference image area as shown in figure 5 (when image 21 is the sensed image and image 31 is the reference image).

It would have been obvious to one of ordinary skill in the art at the time of invention to transform the perspective of the sensed image to the perspective of the reference image area, because Neff teaches that, as known to those skilled in the art, the geometric warping of an image is typically performed by means of transformation viewpoint equations that are implemented by an image processor at col. 16, and one of ordinary skill in the art at the time of invention would realize that using the transformation equations to transform the reference image to the sensor image, or vice versa, would produce two images having the same perspective, as shown by Bell, who teaches that the transformation equations can be used to transform a sensor to a reference image.

For claim 6, Bell discloses that both the sensor image and the reference image area are transformed to a common perspective (see figure 7).

For claim 7, Bell and Hsu both disclose the transforming operation enhances the fidelity of the transformed image using a 3-D surface model of the scene (see figure 9 of Bell for example).

For claim 9, Hsu discloses the mapping step comprises determining geocoded locations in the sensor image corresponding to the geocoding of said locations in the reference image.

For claim 16, Neff discloses the elements of base claim 13. Hsu discloses determining geocoded locations in the first image corresponding to the geocoding of the second image (see figure 5).

For claim 19, Bell discloses the perspective of the first image portion is transformed to substantially the perspective of the second image portion (see figure 5).

For claim 20, both the first image portion and the second image portion are transformed to a common perspective (see figure 7).

For claim 21, the transforming step further comprises the step of enhancing the fidelity of the transformed image using a 3-D surface model of the scene (see figure 9).

For claim 23, Hsu discloses one of said first and second image portions is geocoded, said mapping step further comprising the step of: determining geocoded scene locations in the other of said image portions corresponding to the geocoding of the scene locations of said one image portion (see figure 5).

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neff in view of Hsu and Bell, and further in view of common knowledge in the art.

For claim 12, Neff discloses matching images by considering the angle and direction by which the images were obtained. Bell discloses matching images by

Art Unit: 2624

considering the collection geometries of the image collection sources. Although Neff and Bell do not explicitly disclose the transforming step comprises aligning the reference chip with the azimuth direction of the sensor, it would have been obvious to a person of ordinary skill in the art at the time of invention to align the reference chip with the azimuth direction of the sensor. Applicant has not disclosed that aligning the reference chip with the azimuth direction of the sensor provides an advantage, is used for a particular purpose or solves a stated problem that is not provided, used, nor solved by Neff and Bell. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with the transformations that consider the angle and direction by which the images were obtained, and the collection geometries of the image collection sources as taught by Neff and Bell, because these transformations perform the same function as aligning the reference chip with the azimuth direction of the sensor, in the same way to achieve the same result, which is generating images that have a common perspective.

Therefore, it would have been obvious to combine to one of ordinary skill in this art to modify the transformations that consider the angle, direction, and collection geometries of Neff and Bell with the azimuth direction to obtain the invention as specified in claim 12.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory

Art Unit: 2624

obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 8-25 are provisionally rejected on the ground of nonstatutory double patenting over claims 1-20 of copending Application No. 11/382,523. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: the system claims 1-12 in the copending application contain the same elements as method claims 1, 3-25 of this application, except in system form. One of skill in the art knows how to implement a method of claims 1, 3-25 of this application because the elements of the system of the copending application perform the functions of the method claimed in this application. Also, claims 13-25 of this application are broader versions of claims 1-20 of the

Art Unit: 2624

copending application. One of skill in the art knows how to perform the broader method of claims 13-25 using the functions performed by claims 1-20 of the copending application.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Conclusion

Applicant's arguments with respect to claims 1, 3-25 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2624

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey S. Smith whose telephone number is 571 270-1235. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSS
December 27, 2007


JINGGE WU
SUPERVISORY PATENT EXAMINER